

CLAIMS:

1. A device incorporating a first wireless communications arrangement adapted to operate in accordance with a first communications standard and a second wireless communications arrangement adapted to operate in accordance with a second communications standard, at least a portion of a range of operation according to said first and second communications standards being in use in an overlapping relationship, said device having a protocol architecture including at least one of software implemented driver-level switching and dynamic parameter control adapted to ensure that there is substantially no mutual interference between communications at said device under either of said first and second communications standards.
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2. A device according to claim 1, wherein said driver level switching avoids said mutual interference through the application of a scheduling policy to transmissions under each said communications standard.
- 15 3. A device according to claim 2, wherein said scheduling policy is adapted to place said transmissions in a queue and to control said queue such that transmissions under one of said communications standards do not collide with transmissions under the other communications standard.
- 20 4. A device according to claim 2, wherein said scheduling policy comprises a time-share mechanism adapted to apply predetermined percentages of time to transmissions made under each said communications standard.
- 25 5. A device according to claim 2, wherein a duty cycle of said scheduling policy is dynamically varied according to the characteristics of communications traffic under each said standard.

6. A device according to claim 1, wherein said communications standards comprise wireless communications standards and said software is implemented in the form of a wireless adaptation layer.

5 7. A device according to claim 1, wherein said software further comprises a quality-of-service arrangement adapted to schedule transmission under said communications standards according to application requirements.

10 8. A device according to claim 1, wherein schedulers of each communications standard communicate, such that each one knows when a channel is taken by a communication from the other and refrains from transmitting, said schedulers preferably communicating at Medium Access Control (MAC) level.

15 9. A device according to claim 8, wherein policies for said schedulers are set in accordance with channel state or traffic information.

10. A device according to claim 1, wherein communications under a said standard are performed at least temporarily using a reduced bandwidth, such that communications under the other said standard substantially do not overlap.

20 11. A device according to claim 1, wherein said communications comprise packet transmissions.

25 12. A device according to claim 1, wherein said communications standards comprise Bluetooth and IEEE 802.11.

30 13. A device according to claim 12, wherein an operating parameter, such as one or more of packet fragmentation, variable transmission power and variable data rate, is activated by said software only when it is determined that it is required, such determination preferably being based on traffic characteristics.

14. A device according to claim 12, wherein collision avoidance between said communications standards is implemented in Bluetooth hardware or firmware.

15. A device according to claim 1, wherein said device comprises one of a client device, a master unit, a slave unit or an access point.

16. A method of implementing co-existence of a plurality of wireless communications arrangements operating under communications standards having at least partially overlapping bandwidths, the method including implementing, in software at driver level in a protocol stack, a driver level switching arrangement adapted to ensure that there is substantially no mutual interference between communications under said communications standards.

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17. A software product having encoded thereon executable code for implementing co-existence of a plurality of wireless communications arrangements operating under communications standards having at least partially overlapping bandwidths, the software product including code for implementing, at driver level in a protocol stack, a driver level switching arrangement adapted to ensure that there is substantially no mutual interference between communications under said communications standards.